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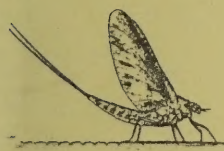
UPPER SMOKE CREEK AQUATIC HABITAT MANAGEMENT PLAN

EAGLE LAKE RESOURSE AREA
SUSANVILLE DISTRICT



UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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UPPER SMOKE CREEK AQUATIC HABITAT MANAGEMENT PLAN

C2-WHA-A5
SEPTEMBER 1983

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Upper Smoke Creek Aquatic Habitat Management Plan

C2 - WHA - A5

United States Department of the Interior

Bureau of Land Management

Susanville District
Eagle Lake Resource Area

Prepared by:
Greg M. Yuncevich
Wildlife Management Biologist
September 1983

Approved by: A E. Naylor
Regional Manager,
California Department of Fish & Game

12-7-83
Date

Approved by: C. Ray Cleary
District Manager,
Bureau of Land Management

12/14/83
Date

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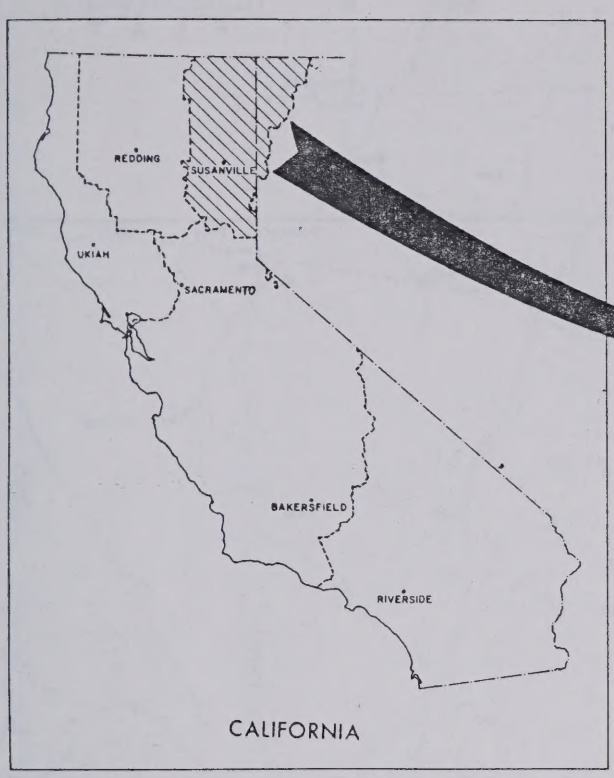
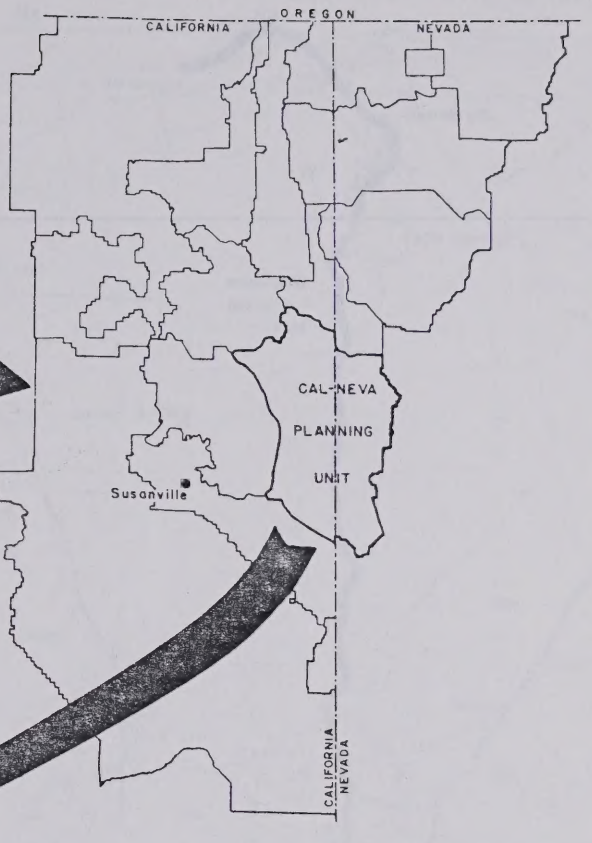
ABSTRACT

This plan describes habitat components and their condition as they relate to the acquatic resources of Upper Smoke Creek. A series of planned actions are included to protect, improve, and perpetuate the aquatic and riparian habitat associated with the creek. Actions are designed to deal with impacts of livestock grazing, streambank stabilization, revegetation, and the possible reintroduction of trout.

The plan provides for evaluating the effectiveness of the actions taken and the long-term monitoring of the species and its habitat.





SUSANVILLE DISTRICT

CAL-NEVA PLANNING UNIT

CAL-NEVA PLANNING UNIT

GENERAL LOCATION

PAINTERS
FLAT
Reservoir
BM 5634
Big Spring
Smoke Cr
JEEP
Painters Flat
5630
5628
BM 5640
Wagontire
Spring
Stove Spring
BM
5513
Petes Spring
CALIFORNIA
BM 5964
Horn Springs
5938
5981
BM
5180
Smoke
Spring
Al Shinn
Canyon
5589
5467
5592
Res
Sage Hen Spring
BM 5086
5976
VABM 6163
Black
Shinn Ranch
BM
5017
BM 5127
5218
5642
Creek
E G A M E
BM
4998
5304
5265
BM 4881
Spring
Spring
5758
UPPER SMOKE CREEK AQUATIC
HABITAT MANAGEMENT PLAN AREA
Creek
6035
Mountain
6264
5612
6234
5717
Smoke Creek
Reservoir
BM
LASSEN CO

UPPER SMOKE CREEK AHMP

AREA LAND STATUS

(shaded areas not BLM)

Form 6780–1
(July 1981)
(formerly 6620–1)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

CHECKLIST FOR PREPARATION AND REVIEW OF HABITAT MANAGEMENT PLANS

State: California
District: Susanville
Resource Area: Eagle Lake
HMP Name and Number: Upper Smoke Creek ~~Aquatic Habitat Management Plan~~
HMP Prepared by: C2-WHA-A5 Greg M. Yuncevich

REVIEW CHECKLIST	SURNAME	DATE
1. Master Memorandum of Understanding, Sikes Act Agreement and/or Supplemental with State Agency.		July 1982
2. Preliminary meeting(s) with State Agency *(or other appropriate cooperators)* to jointly discuss HMP objectives.		June, July, August, September 1982
3. Endangered Species Act Compliance completed by	J Schonbrunn	9/8/83
4. Review by District/Resource Area Specialists		
Range	Schultz	9/8/83
Wild Horse and Burro		
Hydrologist	G. Wingate	9/8/83
Forestry	D Morlatt	9/8/83
Fisheries/Botanist/Wildlife Biologist	J Schonbrunn	9/8/83
Lands	J. Gratton	9/8/83
Minerals	[illegible]	9/12/83
Recreation	S J Bales	9/8/83
Wilderness/ACEC	S J. Bales	9/8/83
Cultural	D Mann	9/8/83
Visual	S J Bales	9/8/83
Environmental Coordinator *(reviews EAs)*	S. Bosworth	9/8/83
Support ~~*(Chief of Operations*~~/*Fire Management)*	D.A. Orsburn	9/8/83
Others		
5. Reviewed by Area Manager	MT Morse	9/1/83
6. Reviewed by Chief of Resource Management		
7. Draft HMP and EA reviewed by State Agency authorized officer *or other cooperators).*	V.L. King	12/7/83
8. Final review *(if appropriate)* by State Director		
9. Reviewed and approved by District Manager	C. Reykleary	12/14/83
10. Approved by State Agency authorized officer		

Remarks

* U.S. Government Printing Office: 1981-780-779/692 Reg 8

UPPER SMOKE CREEK AQUATIC HABITAT MANAGEMENT PLAN

INTRODUCTION

The Upper Smoke Creek Aquatic Habitat Management Plan (AHMP) covers approximately 14 miles of stream and the associated riparian habitat area. The stream is located in northeastern Lassen County about 45 miles northeast of Susanville, California (see location maps).

Smoke Creek has its origin at Big Springs at an elevation of 5,400 feet and travels through Great Basin sagebrush habitat types until it reaches the Smoke Creek Desert, a closed basin. Along its course, it falls through a deep canyon with rocky escarpments that in places present a barrier to livestock entrance. These escarpments have subsequently protected the riparian vegetation from the heavy utilization that has occurred where the stream is not naturally 'protected'.

Smoke Creek, a perennial stream in an otherwise arid environment, provides habitat for numerous aquatic and terrestrial species associated with riparian systems (see Cal-Neva URA & EIS). It is also unique in that it possesses the highest potential to support a wild trout fishery in the Cal-Neva Planning Unit. Although no trout have been collected in recent investigations, several Department of Fish and Game personnel indicate that numerous successful fishing trips were recorded from the late 1960's through 1982. (Conrad, King, Pyshora, personal communication).

The decision to develop the Upper Smoke Creek AHMP can be tracked through the planning process from initial inventory, through the Cal-Neva Unit Resource Analysis, Management Framework Decisions, and Grazing E.I.S. record of decision. The AHMP meets the requirements of a "comprehensive plan" as presented by Title II, Sec. 201(a) of the Sikes Act, as amended (P.L. 93452; 16 U.S.C. et. seq.). (See BLM Manual Section 6525.02.)

The plan has been developed in cooperation with the California Department of Fish and Game in compliance with the Master Memorandum of Understanding between the Bureau and Department signed in July 1982. The AHMP will serve as a memorandum of understanding for projects detailed in the plan.

The overall objective of this AHMP is to manage habitats on the public lands for the conservation and rehabilitation of fish, wildlife, and plant resources consistent with multiple-use management principles.

Public envolvement was sought throughout the planning process and the local public was informed of the intent to develop the AHMP with a newspaper article (see Appendix I).

ECOSYSTEM DESCRIPTION

Upper Smoke Creek runs through typical Great Basin sagebrush habitat types. Where the stream is protected by steep rocky escarpments, numerous riparian species can be found. In many areas where livestock use is not inhibited by steep rocky terrain, willows and perennial grass have been replaced by sagebrush, yarrow, thistle, and annual grasses. This vegetative change has resulted in a diurnal water temperature regime that is, at best, marginal for trout species. Upper Smoke Creek has also suffered moderate to heavy bank sloughing, moderate surface erosion, and moderate to heavy surface disturbance of streambanks.

During the 1979 field season, the Willow-Riparian habitat type was sampled along Lower Smoke Creek. Generally, Upper Smoke Creek possesses greater species richness and better ecological condition, but the area sampled on Lower Smoke Creek is somewhat comparable. A 200-toe-point vegetative transect revealed that ten percent of the total (33.5%) vegetative basal hits were on willow, 25 percent were on rushes and sedges, and 22 percent were on perennial grasses. The willow averaged 5 feet, the rushes and sedges 4 inches, and the perennial grasses 10 inches in height. There was also some wild rose on the site which averaged 3 feet in height. There was 34 percent total canopy cover on the site, of which 94 percent was shrub canopy. (See Cal-Neva URA).

Historically, the stream supported a trout fishery but stream surveys in 1977 and 1982 revealed no trout (see Appendix II).

RELEVANT CONSTRAINTS

As stated in the Land Use Plan Summary, the first two overall land use objectives for the Cal-Neva Planning Unit are:

1. Improve the ecological condition of public lands by minimizing destructive uses and by providing for their orderly use and improvement under multiple use management.

2. Give consideration and priority to the protection and management of areas with special environmental concern.

In addition, nine overall planning goals were developed, including the following: "to improve important wildlife habitat including ... improvement of the unprotected willow-riparian areas from poor to fair ecological condition.... and to increase or maintain the quality and quantity of water on or beneath public lands so as not to degrade the beneficial uses of that water, including flood plain and wetland values." (See Cal-Neva Land Use Plan Summary).

On September 4, 1981, a notice appeared in the Federal Register announcing that BLM filed a Final Environmental Impact Statement for livestock grazing within the Susanville District's Cal-Neva Planning Unit. The BLM has decided to adopt the Preferred Alternative described in the EIS, with four modifications.

One of the modifications is that the EIS proposed fencing 14 miles of riparian habitat along Smoke Creek to protect wildlife habitat, watershed, and cultural resources from livestock grazing. However, prior to fence construction, a Habitat Management Plan (HMP), Cultural Resource Management Plan (CRMP), and water quality Best Management Practice (BMP) analysis must be developed to identify management objectives, and, through monitoring, determine if the objectives are being met without fencing. Protective fencing would still be constructed if necessary to meet wildlife, water quality, and cultural objectives. (See Cal-Neva Grazing EIS Record of Decision).

MANAGEMENT OBJECTIVES

The general management objective is to restore and maintain the capability of Upper Smoke Creek to provide habitat suitable for survival and reproduction of trout and to increase habitat quality for all species associated with riparian habitats.

Specific objectives are:

1. To increase stream shading to 70% or more. (Present shading is 40% or less).

2. To improve streambank condition.

   a. To increase streambank vegetation so as to decrease amount of bare soil to less than 5%.

   b. To decrease streambank sloughing and erosion to 10% or less.

3. To decrease the degree of stream channel movement to 5% or less.

4. To decrease the percent of fine sediments covering the stream bottom to less than 10%.

5. To reduce summer maximum high water temperatures to 70 F or less.

6. To reestablish a viable trout population.

PLANNED ACTIONS

1. Exclude livestock grazing on the lower reaches of Upper Smoke Creek by constructing fences across the few access routes into the canyon area. This would protect approximately 3½ miles of the stream on public land (see Map page IV) and could be accomplished in conjunction with range management activities. Range developments proposed in the Cal-Neva MFP include a pasture division fence which would coincide with the exclosure fence needed on the south side of the canyon rim. Additional fencing would be needed on the few access points on the north side of the rim and also across the creek at the upper and lower ends of the canyon. No more than 2 miles of fencing should be needed to accomplish this action.

Fencing the canyon will provide for immediate improvement along that portion of the creek that has the highest potential as trout habitat and will serve as a monitoring standard to compare the results of other planned actions and to determine the potential for habitat improvements.

Cost/Work Month (WM) Estimate:	
Materials @ $1200/Mile	$2400
WM @ $3300 x 1½	$4950
TOTAL	$7350

2. Begin revegetation and streambank stabilization by planting willow and wild rose along the stream course. Plantings would be done in stages progressing from the lower end up. Initially, the area in the canyon and inside the exclosure would be planted along with a section just upstream of equal length. After the first year, if survival of planted stock was enough to justify additional plantings, plantings would be accomplished as funding and manpower permitted until the entire AHMP area was revegetated. Cuttings would be taken from plants within the drainage if at all possible, rooted, and replanted.

Cost/Work Month Estimate:	
Materials (collected on site)	$ 0
Work Month @ $3300 2	6600
TOTAL	$6600

3. With the aid of Department of Fish & Game personnel, assess the present trout population and determine if there is a need to reintroduce trout into Upper Smoke Creek. Prior to any reintroduction, water quality parameters will be monitored to insure survival.

Cost/Work Month Estimate:	
Materials (Nets, miscellaneous equip.)	$ 100
Trout for reintroduction (unable to assess at this time)	
Work Month @ $3300 ½	$1650
TOTAL	$1750

4. Along with bank planting and stabilization, inventory areas along the drainage that would lend themselves to gap fencing and creating small exclosures (½ mile of stream). Then, if monitoring indicated that revegetation could not be accomplished without fencing, create more areas of exclosure in coordination with the AMP for Cal-Neva #3 pasture (AMP to be accomplished in FY 84).

This action would be accomplished during the revegetation process and would require no additional work months for inventory. Work months required for fencing exclosures would be dependent upon the extent of fencing required.

Cost/Work Month Estimate:		(per mile of stream-as needed)
Materials		$1200
Work Month	1/2	$1650
	TOTAL	$1850

5. Monitor erosion and, if needed, engineer and install instream devices. Instream devices should only be used as a last resort if vegetation manipulation is inadequate and will be fully coordinated with the District Hydrologist and the California Department of Fish and Game.

Cost/Work Month Estimate:		Monitoring
Work Month	1/4	$825 each Fiscal Year

(Cost estimates for instream devices cannot be made at this time)

6. Cooperate with the Department to insure that beaver do not become established in the drainage until such time as the vegetation can support them. At this time there is no evidence of beaver activity in Upper Smoke Creek. If beaver control becomes necessary, California Department of Fish & Games will be responsible for maintaining beaver populations at levels that do not interfere with the general management objectives for the AHMP.

   This can be accomplished in coordination with other programmed activities and would require no additional funding.

7. Obtain water rights to facilitate diversion of a portion of the water out of the Upper Smoke Creek canyon for livestock use outside the drainage. Work with water rights agencies to develop procedures for securing instream flows.

   This would be accomplished by the District Hydrologist.

Cost/Work Month Estimate:		
Work Month	1	$3300

8. Gain ownership of Smoke Creek Reservoir if and when it becomes available. This will insure more cooperation from the California Department of Fish and Game in that they would be assured of public access and could justify a more intense stocking program. This would also develop Upper Smoke Creek into a more complete manageable habitat unit.

   Land exchange or purchase would be coordinated through the Area and District Realty Specialists.

Cost/Work Month Estimate:		
Work Month	6	$19,800

WATER RIGHT CONSIDERATIONS

Since the origin and several of the springs which feed Upper Smoke Creek are located on private land, it is quite important that a minimum flow of water be assured if the AHMP is to be successful.

At this time, instream flows are not considered a beneficial use of water in California and a water right for instream flow cannot be established.

Acquiring water rights would be feasible only if ownership of Smoke Creek Reservoir could be transfered into public domain.

EVALUATION AND MONITORING

This Habitat Management Plan will be reviewed annually to determine if revision is needed. Once a year, the BLM Area Biologist and CDFG Biologists will review progress on implementation of this plan and submit a report to the Area Manager. The report will indicate the following:

a. Progress made on implementing the plan.

b. Recommended modifications in the plan.

c. Priorities for future implementation.

With the concurrence of the Area Manager, the recommended modifications will be forwarded to the CDFG and any other agencies that are parties to any cooperative agreement for their information and approval.

Necessary analysis required to measure progress in accomplishing objectives as stated in this plan are as follows:

1. Physical Stream Survey - A physical stream survey shall be completed the first year following revegetation attempts and should be continued at three year intervals afterwards to monitor progress. All surveys shall be reported in Physical Stream Survey Report Form CA-6670-1. In those areas where a stream survey has not yet been completed they can be run in conjunction with the first year revegetation attempts.

The entire AHMP area could be evaluated in ½ a work month (est. $1650). The evaluation should be accomplished during the summer field season and will be coordinated with watershed evaluations conducted by the District Hydrologist.

2. Biological Stream Survey - Following any reintroduction of trout into Upper Smoke Creek, a biological stream survey should be completed in cooperation with the Department of Fish and Game to monitor trout survival and reproductive success. Initial sampling should occur the year following reintroduction and then again on an as needed basis to adequately monitor the trout population. All survey data will be reported on Biological Stream Survey Report Forms CA 6670-2.

This could be accomplished with a quarter of a work month (est. cost $825) and would be coordinated with Department personnel.

3. Allotment Management Plan Monitoring - An AMP is scheduled to be written for the Cal-Neva #3 pasture in FY84 and should include monitoring systems to evaluate the grazing system. The monitoring evaluations will determine the effects of the grazing system on range trend.

The grazing system effects on riparian vegetation and streambank stability will be monitored in cooperation with watershed and wildlife activities.

Trend plots will be measured at the same frequency as the rotation of the grazing system (3 year intervals).

4. Necessary District (BLM)/Regional (CDFG) coordination regarding this plan will be accomplished at the annual BLM/CDFG coordination meeting.

Form 6780–2
(July 1981)
(formerly 6620–3)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
1. Increase stream shading to 70% or more. 2. Improve streambank condition. a. Decrease amount of bare soil to less than 5%. b. Decrease erosion to 10% or less. 3. Decrease stream channel movement to 5% or less. 4. Decrease fine sediments on stream bottom to less than 10%. 5. Decrease summer maximum high water temperatures to 70 degrees or less. 6. Re-establish a viable trout population.		1. Exclude livestock grazing by fencing access routes into the canyon. 2. Begin revegetation and streambank stabilization by planting willow and wild rose along the stream course. 3. Assess the viability of the present trout population. 4. Inventory areas for potential gap fencing and for creating small exclosures. If monitoring indicates that revegetation isn't possible without fencing, create more areas of exclosure. 5. Coordinate with District Hydrologist to monitor erosion and, if needed,		1. Physical Stream Survey Report (CA 6670-1) A Report should be done the first year following revegetation attempts, and then at 3-year intervals. 2. Biological Stream Survey Report (CA 6670-2) - A report should be done the first year, following any re-introduction, and then on an as-needed basis to adequately monitor the trout population. 3. Allotment Management Plan Monitoring-AMP is scheduled for FY84 and should evaluate effects of grazing on riparian vegetation and streambank stability.	

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

...ernment Printing Office: 1981-780-780/693 Reg 8

Form 6780–2
(July 1981)
(formerly 6620–3)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

HABITAT MANAGEMENT PLAN PROGRESS REPORT

OBJECTIVES	DATE COMPLETED	PLANNED ACTIONS	DATE COMPLETED	EVALUATION/MONITORING	DATE COMPLETED
		engineer and install in-stream devices. 6. Cooperate with Fish and Game to insure that beaver population do not interfer with the objectives. 7. Obtain minimum flow water rights for Upper Smoke Creek. 8. Gain ownership of Smoke Creek Reservoir if and when it becomes available.			

INSTRUCTIONS

1. List specific HMP objectives as developed from RMP/MFP planning documents or as otherwise approved.
2. List specific planned actions to be initiated to meet each specific objective.
3. List scheduled evaluation/monitoring study(s) planned to evaluate accomplishments.
4. Enter completion date for each objective, action, or evaluation/monitoring study as accomplished.

...rnment Printing Office: 1981-730-780/693 Reg 8

COORDINATION WITH OTHER BLM PROGRAMS, AGENCIES AND ORGANIZATIONS

1. Livestock Management - The Upper Smoke Creek AHMP area falls within Cal-Neva #3 Allotment. An AMP is scheduled to be completed in FY84 for that allotment. It is anticipated that a grazing system will be implemented that will consider wildlife values and, in particular, the needs to maintain vegetative cover along Upper Smoke Creek. Initially, a rest-rotation or deferred-rotation system will probably be instituted. Since neither of these systems is designed to enhance riparian vegetation, monitoring will be incorporated to determine the effectiveness of the grazing system in meeting land use objectives and goals. If it is determined that these systems do not protect the riparian values, alternate grazing systems, additional exclosures, and alternate water sources for livestock and wild horses will be instituted.

The initial exclosure on the lower portion of Upper Smoke Creek (within the canyon) should have minimal impact on the allotment as a whole.

2. Watershed Management - Fencing of the lower portion of the Creek and of eroded riparian sites will be the primary method of improvement for watershed management. Excluding livestock will gradually enable the grasses, forbs, shrubs, and trees to abate soil movement and improve water quality. In time, with diminishing sediment load and continual flushing of the creek, the compacted gravel used for spawning will be released from its silt-type bond, enabling trout to utilize additional spawing areas. With Best Management Practices (BMP) instituted, several objectives will be met, along with State standards for constituents to sustain a cold water fishery.

The District Hydrologist or staff will continue to monitor water quality constituents yearly. Presently, the only constituents found to be marginal for trout survival is temperature.

3. Recreation Management - Implementation of the AHMP should enhance recreational opportunities on the public domain.

4. Wild Horse and Burro Management - The initial exclosure fence planned for the lower portion of the creek within the canyon should have little impact on wild horses or burros. If additional exclosures are needed, their placement will be coordinated with the wild horse and burro specialists.

5. Wilderness - Implementation of the AHMP will not be in conflict with Wilderness Management Policy.

6. Lands - A majority of the water in Upper Smoke Creek originates from springs on private ownership. Also, the creek flows into a large reservoir which is also in private ownership. Management of the privately owned waters has a significant impact on the public lands portion of Upper Smoke Creek. Exchange or purchase for these lands would create additional opportunities for this AHMP and would require close coordination with the Realty Specialist. All lands within the AHMP area should be retained in public ownership.

7. Archaeology - Implementation of the AHMP should enhance the protection of cultural artifacts occurring within those portions of the AHMP area that are excluded from livestock grazing.

8. Fire Management - Although major suppression activities would not be expected in the immediate vicinity of the creek, heavy equipment and retardant could significally impact short term water quality. In the case of any major suppression activities within the watershed, a resource advisor should be on the scene to insure that the watershed values are protected.

OTHER AGENCIES AND ORGANIZATIONS

California Department of Fish and Game - Full coordination and cooperation has been accomplished. Approval of this AHMP will be considered as a memorandum of understanding between the Bureau and the Department. Full implementation will take the cooperation and concurrance of the Department.

ECONOMICS

Since the management objectives are intangible in nature and specific values or costs are not comparable, a "least cost approach" is used to evaluate the most beneficial approach in accomplishing the identified objectives.

In general, the objectives are to improve the instream aquatic habitat, the associated riparian habitat, and to establish a viable trout population. None of these objectives can be accomplished without significally reducing the impact from livestock grazing within the habitat management area.

Three alternatives will be compared:

1. No livestock grazing - this alternative was compared in the Cal-Neva EIS and was not considered as a viable alternative because of the financial loss in annual sales of meat and wool to the livestock industry.
2. Exclude grazing from the entire habitat management area - this alternative would meet the objectives of the HMP but would require a minimum of 30 miles of fencing plus the cost of developing alternative water sources outside the exclosure for livestock watering.
3. Exclude livestock from a portion of the HMP area initially by using a minimum amount of fencing to exclude livestock from approximately 3 miles of the creek within the natural 'barrier' of the canyon. Additional fencing would be utilized to exclude portions of the creek as necessary if monitoring indicated that the HMP objectives were not being met.

The last alternative examined would require the least amount of expenditure and could be accomplished in conjunction with ongoing range management efforts.

PUBLIC AFFAIRS

The intent of the public affairs action plan is to inform interested publics, individuals and agencies of the HMP objectives and planned actions.

ACTION ITEM	WHEN	WHO
1. News Stories		
- Intent to develop HMP	Aug, 1982	PIO
- Special problems or successes	Anytime	PIO, Biologist
2. Send copy of HMP or abstract to cooperating agency	Sept, 1983	Biologist
3. Photo documentation of all activities for long range information programs	Ongoing	PIO, Biologist

Upper Smoke Creek AHMP Costs Summary

Estimated Cost ($1,000's) and Work Months (W/M) by Development Year

* Indicates Less Than 1 W/M

COST ITEM	Year 1		Year 2		Year 3		Year 4		Year 5		Year 6		Year 7	
	W/M	$	W/M	$	W/M	$	W/M	$	W/M	$	W/M	$	W/M	$
Administration & Preparation														
1. AHMP Writing	1	3												
2. AHMP Update & Revisions			*		*		*		1	3	*		*	
Implementation/Maintenance														
1. Primary exclosure construction					2	7								
2. Secondary exclosure (per 1 mile) as needed							1	3	1	3	1	3	1	3
3. Revegetation					2	6	1	3	1	3	1	3	1	3
4. Reintroduction of Trout if necessary					*									
5. Monitoring of vegetative response					*		*		*		*		*	
6. Survey & Design secondary exclosures (see #2 above)					*		*		*		*		*	
7. Monitor erosion					*		*		*		*		*	
8. Survey & Design instream devices as necessary if indicated from #7 above							*		*		*		*	
9. Secure instream flows/water rights			1	3	*		*		*		*		*	

BLM 'Electrofishes' For Rainbow Trout

By Anne Bikle,
student volunteer,
Susanville BLM

Have you ever wondered how a wildlife biologist finds out what kind of fish live in a creek?

Greg Yuncevich, wildlife biologist for the BLM's Eagle Lake Resource Area, recently electrofished Smoke Creek and found four species of fish: speckled dace, Tahoe sucker, tui chub, and red-sided shiner.

Information about the types and number of fish will help him develop an Aquatic Habitat Management Plan for Smoke Creek. This plan is a study of ways to improve and restore ecological conditions in Smoke Creek so it can be managed as a fishery.

Smoke Creek is located east of U. S. 395 between Ravendale and Wendel.

Electrofishing is a common survey method used by state and federal wildlife agencies. It consists of sending pulses of electric current through an electrode (metal pole) into the water.

The electric current passes through a fish's body, causing it to momentarily lose its balance and rise toward the surface.

The electric current affects fish within eight to nine feet of the electrode. When fish appear at the surface, they can be easily scooped out of the water and placed in holding buckets. The captured fish are sorted, and the size and numbers of each species are noted.

Although electrofishing did not turn up any trout, Smoke Creek historically supported a rainbow trout fishery.

Livestock grazing in some places has removed or changed much of the creek side vegetation, which in turn has created inhospitable conditions for trout. Creek side vegetation is an important component of trout habitat because of the shade and cover it provides over the water and the stability it provides to the creek banks.

"The shade also helps to keep water temperatures cool," said Yuncevich. Rainbow trout cannot survive where water temperatures exceed 76 degrees Fahrenheit for extended periods.

Numerous large and small mammals, including deer, porcupine, and badger, as well as a variety of birds, use riparian vegetation for food and shelter. "The diversity and density of vegetation along a creek is integral to habitat quality for terrestrial and aquatic species," Yuncevich explained.

Because of the historic fishery in Smoke Creek, he said, if habitat rehabilitation attempts are successful the creek has a good potential for supporting a trout fishery once again.

APPENDIX II

	1977	1982
% Pools	28	72
Stream Cover (% Shade)	40% or less	40% or less
Stream Bank Condition (% Bare Soil)	15-25%	6-15%
Stream Bank Stability (% Bank Damage)	20-40%	20-40%
Stream Channel Stability (% Channel Movement)	10-15%	6-10%
Sedimentation of Streambed (% Silt)	10-25%	26% or more
Stream condition rating	13 (fair)	11 (fair)

Physical Stream Survey-1977 & 1982

FISH SPECIES	1977	1982
Tahoe Sucker	58	209
Speckled Dace	--	1011
Tui Chub	20	32
Redside Shiner	1	--

Biological Stream Survey-1977 & 1982

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PHYSICAL AND BIOLOGICAL STREAM SURVEY

Date

1. Surveyor

Agency

2. Stream | a. Tributary | b. Basin

3. Location *(stream mouth)* | Township | Range | Section

4. County | 5. State Administration Unit Number | Code Number

6. PHYSICAL SURVEY DATA

a. Station to distance *(miles)*

b. Stream width *(average)*
_____ ft. today
_____ ft. when _____ spawn
_____ ft. when _____ spawn

c. TURBIDITY *(Visibility in feet)*

MUDDY		MURKY		CLEAR	
<.5	.5–1	1–2	2–5	5–10	10+

d. Jackson Turbidity Units

e. Temperature: Air °F, Water °F, Time , Flow *(c.f.s.)* Now , High , Low

f. GRAVEL, POOL AND RUBBLE AREA

SUB-SECTION	FISH SPECIES	GRAVEL *(sq. yards)*			POOLS		RUBBLE *(sq. yards)*	TOTAL *(sq. yards)*
		GOOD	MARGINAL	TOTAL	SQ. YARDS	DEPTH		
Total								

g. PERCENT OF SECTION IN POOLS *(check)*

0	10	20	30	40	50	60	70	80	90	100

h. Gradient *(check)*
- ☐ Steep (2.5 + %)
- ☐ Moderate (1.0 to 2.5 %)
- ☐ Flat (0 to 1 %)

i. PERCENT OF AVERAGE STREAM AREA SHADED *(check)*

0	10	20	30	40	50	60	70	80	90	100

j. STREAMSIDE COVER TYPE

LOGGED WITHIN (years)		GROWTH		HERB	OTHER
0–5	6–10	2nd	OLD		

(Continued on reverse)

7. FISH SPECIES, SIZE, AND ABUNDANCE

a. Method of collection

SPECIES	SIZE	NUMBER PER 100 FT.			SPECIES	SIZE	NUMBER PER 100 FT.		
		0–5	6–50	50+			0–5	6–50	50+

8. LIMITING FACTORS

BARRIERS *(type)*				HEIGHT *(ft.)*	PASSABLE		CORRECTIONS NEEDED	
DAM	FALLS	LOGJAM	CULVERT		YES	NO	YES	NO

Other factors

9. Access

10. Additional Comments

INT: 4428–73

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

PHYSICAL AND BIOLOGICAL STREAM SURVEY REPORT

Date

1. Surveyor

Agency

2. Stream	a. Tributary	b. Basin

3. Location *(stream mouth)*	Township	Range	Section

4. County	5. State Administration Unit Number	Code Number

6. PHYSICAL SURVEY DATA

a. Station to distance *(miles)*

b. Stream width *(average)*

_____ ft. today

_____ ft. when _____ spawn

_____ ft. when _____ spawn

c. TURBIDITY *(Visibility in feet)*

MUDDY		MURKY		CLEAR	
<.5	.5–1	1–2	2–5	5–10	10+

d. Jackson Turbidity Units

e. Temperature: Air °F, Water °F, Time , Flow *(c.f.s.)* Now , High , Low

f. GRAVEL, POOL AND RUBBLE AREA

SUBSECTION	FISH SPECIES	GRAVEL *(sq. yards)*			POOLS		RUBBLE *(sq. yards)*	TOTAL *(sq. yards)*
		GOOD	MARGINAL	TOTAL	SQ. YARDS	DEPTH		
Total								

G. PERCENT OF SECTION IN POOLS

0	10	20	30	40	50	60	70	80	90	100

h. Gradient

- ☐ Steep (2.5 + %)
- ☐ Moderate (1.0 to 2.5 %)
- ☐ Flat (0 to 1 %)

i. AVERAGE STREAM AREA SHADED *(percent)*

0	10	20	30	40	50	60	70	80	90	100

j. STREAMSIDE COVER TYPE

LOGGED WITHIN (years)		GROWTH		HERB	OTHER
0–5	6–10	2nd	OLD		

7. FISH SPECIES, SIZE, AND ABUNDANCE

a. Method of collection

SPECIES	SIZE	NUMBER PER 100 FT.			SPECIES	SIZE	NUMBER PER 100 FT.		
		0–5	6–50	50+			0–5	6–50	50+

8. LIMITING FACTORS

BARRIERS *(type)*				HEIGHT *(ft.)*	PASSABLE		CORRECTIONS NEEDED	
DAM	FALLS	LOGJAM	CULVERT		YES	NO	YES	NO

Other factors

9. Access

10. Additional Comments

INSTRUCTIONS

1. District office completes two (2) copies upon request of Stream Surveyor.
2. Submit original to permanent District file and carbon to Stream Surveyor for final stream survey report.
3. See Form 6670–1 for specific instructions.

☆ U.S. Government Printing Office:1973-784-258/2231 Region 8

Item Rated	Stability Indicators by Classes							
I. UPPER BANKS	EXCELLENT		GOOD		FAIR		POOR	
Landform Slope	Bank slope gradient <30%	(2)	Bank slope gradient 30-40%	(4)	Bank slope gradient 40-60%	(6)	Bank slope gradient 60%+	(8)
Mass Wasting (Existing or Potential)	No evidence of past or potential for future mass wasting into channels.	(3)	Infrequent and/or very small. Mostly healed over. Low future potential.	(6)	Moderate frequency & size, with some raw spots eroded by water during high flows.	(9)	Frequent or large, causing sediment nearly yearlong OR imminent danger of same.	(12)
Debris Jam Potential (Floatable Objects)	Essentially absent from immediate channel area.	(2)	Present but mostly small twigs and limbs.	(4)	Present, volume and size are both increasing.	(6)	Moderate to heavy amounts, predominantly larger sizes.	(8)
Bank Protection from Vegetation	90% + plant density. Vigor and variety suggests a deep, dense root mass.	(3)	70-90% density. Fewer plant species or lower vigor suggests a less dense or deep root mass.	(6)	50-70% density. Lower vigor and still fewer species form a somewhat shallow and discontinuous root mass.	(9)	<50% density plus fewer species & less vigor indicate poor, discontinuous, and shallow root mass.	(12)
II. LOWER BANKS								
Channel Capacity	Ample for present plus some increases. Peak flows contained. W/D ratio <7.	(1)	Adequate. Overbank flows rare. Width to Depth W/D ratio 8-15.	(2)	Barely contains present peaks. Occasional overbank floods. W/D ratio 15-25.	(3)	Inadequate. Overbakn flows common. W/D ratio >25.	(4)
Bank Rock Content	65% + with large, angular boulders 12" + numerous.	(2)	40 to 65%, mostly small boulders to cobble 6-12".	(4)	20 to 40%, with most in the 3-6" diameter class.	(6)	<20% rock fragments of gravel sizes, 1-3" or less.	(8)
Obstructions Flow Deflectors Sediment Traps	Rocks, old logs firmly embedded. Flow pattern of pool & riffles stable without cutting or deposition.	(2)	Some present, causing erosive cross currents and minor pool filling, obstructions and deflectors newer and less firm.	(4)	Moderately frequent, moderately unstable obstructions & deflectors move with high water causing bank cutting and filling of pools.	(6)	Frequent obstructions and deflectors cause bank erosion yearlong. Sed. traps full, channel migration occuring.	(8)
Cutting	Little or none evident. Infrequent raw banks less than 6" high generally.	(4)	Some, intermittently at outcurves & constrictions. Raw banks may be up to 12".	(8)	Significant. Cuts 12"-24" high. Root mat overhangs and sloughing evident.	(12)	Almost continuous cuts, some over 24" high. Failure of overhangs frequent.	(16)
Deposition	Little or no enlargement of channel or point bars.	(4)	Some new increase in bar formation, most from coarse gravels.	(8)	Moderate deposition of new gravel & coarse sand on old and some new bars.	(12)	Extensive deposits of predominately fine particles. Accelerated bar development.	(16)
III. BOTTOM								
Rock Angularity	Sharp edges and corners, plane surfaces roughened.	(1)	Rounded corners & edges, surfaces smooth & flat.	(2)	Corners & edges well rounded in two dimensions.	(3)	Well rounded in all dimensions, surfaces smooth.	(4)
Brightness	Surfaces dull, darkened or stained. Gen. not "bright".	(1)	Mostly dull but may have up to 35% bright surfaces.	(2)	Mixture, 50-50% dull and bright, ± 15%, ie 35-65%.	(3)	Predominately bright, 65% +, exposed or scoured surfaces.	(4)
Consolidation or Particle Packing	Assorted sized tightly packed and/or overlapping.	(2)	Moderately packed with some overlapping.	(4)	Mostly a loose assortment with no apparent overlap.	(6)	No packing evident. Loose assortment, easily moved.	(8)
Bottom Size Distribution & Percent Stable Materials	No change in sizes evident. Stable materials 80-100%.	(4)	Distribution shift slight. Stable materials 50-80%.	(8)	Moderate change in sizes. Stable materials 20-50%.	(12)	Marked distribution change. Stable materials 0-20%.	(16)
Scouring and Deposition	Less than 5% of the bottom affected by scouring and deposition.	(6)	5-30% affected. Scour at constrictions and where grades steepen. Some deposition in pools.	(12)	30-50% affected. Deposits & scour at obstructions, constrictions, and bends. Some filling of pools.	(18)	More than 50% of the bottom in a state of flux or change nearly yearlong.	(24)
Clinging Aquatic Vegetation (Moss & Algae)	Abundant. Growth largely moss like, dark gree, perennial. In swift water too.	(1)	Common. Algal forms in low velocity & pool areas Moss here too and swifter waters.	(2)	Present but spotty, mostly in backwater areas. Seasonal blooms make rocks slick.	(3)	Perennial types scarce or absent. Yellow-green, short term bloom may be present.	(4)
COLUMN TOTALS →			→		→		→	

Add the values in each column for a total reach score here. (E.____ + G.____ + F.____ + P.____ = ____).

Reach score of: <38 = Excellent; 39-76 = Good; 77 [illegible] = Fair; 115 + = Poor.

INSTRUCTIONS

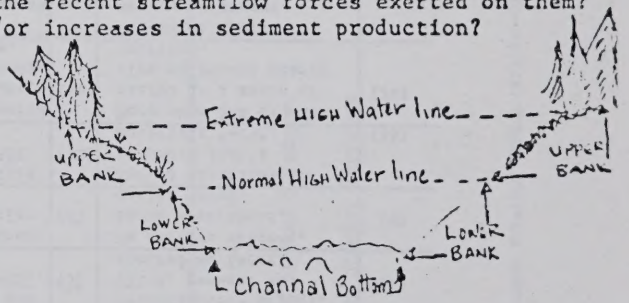
Use a separate rating form for each length of stream that appears similar. Complete the inventory items above using maps, aerial photos and field observations and measurements. On the opposite side of this page, the channel and adjacent flood plain banks are subjectively rated, item by item, following an on-the-ground inspection. Circle only one of the numbers in parentheses for each item rated. If actual conditions fall somewhere between the conditions as described, cross out the number given and below it write in an intermediate value which better expresses the situation. Don't key in on a single indicator or a small group of indicators but use them all for the most diagnostic value. The indicators are interrelated so don't dwell on any one item for long. Do the best you can and the pluses and minuses should balance out. Keep in mind that each item directly or indirectly seeks to answer three basic questions: (1) What are the magnitude of the hydraulic forces at work to detach and transport the various organic and inorganic bank and channel components? (2) How resistent are these components to the recent streamflow forces exerted on them? (3) What is the capacity of the stream to adjust and recover from potential changes in flow volume and/or increases in sediment production? Use your instruction booklet!

DEFINITION OF TERMS AND ILLUSTRATIONS

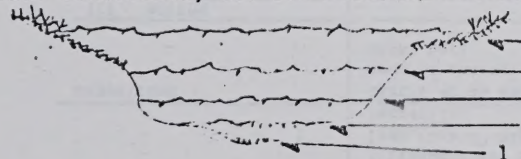
Upper Bank - That portion of the topographic cross section from the break in the general slope of the surrounding land to the normal high water line. Terrestrial plants & animals normally inhabit this area.

Lower Banks - The intermittently submerged portion of the channel cross section from the normal high water line to the water's edge during the summer low flow period.

Channel Bottom - The submerged portion of the channel cross section which is totally an aquatic environment.



Stream Stage - The height of water in the channel at the time of rating is recorded on the top half of this page using numbers 1 through 5. These numbers, as shown below, relate to the surface water elevation relative to the normal high water line. A decimal division should be used to more precisely define conditions, ie. 3.5 means 3/4ths of the channel banks are under water at the time of rating.



5 = Flooding. The flood plain is completely covered.

4 = High. Channel full to the normal high water line.

3 = Moderate. Bottom and ½ of lower banks wetted.

2 = Low. Bottom covered but very little of the lower banks wet.

1 = "Dry". Essentially no flow. Water may stand in bottom depressions.

* Use an asterisk behind all estimates that could be measured but weren't.

IN REPLY REFER TO
6521.13 (C-026)

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Eagle Lake Resource Area Office
2545 Riverside Drive
Susanville, California
96130

CATEGORICAL EXCLUSION RECORD

C-02-83-59

Type of Action: Preparation and implementation of the Upper Smoke Creek Aquatic Habitat Management Plan cooperatively completed with the California Department of Fish & Game under authority of the Sikes Act. (Title II Public Law 93-452)

Qualifying Authority: 516 DM, Appendix 5.4(24).

Location: Refer to AHMP

Resource Area: Eagle Lake

Declaration: I have reviewed the AHMP in accordance with established categorical exclusion procedures. Based on this review, I recommend that no EA or EIS be prepared since the proposal will not individually nor cumulatively affect significantly the human environment. The proposal is not an exception to BLM's categorical exclusions.

Stipulations: Refer to Categorical Exclusion Review Checklist.

Prepared by: Greg M Yuncevich — Wildlife Management Biologist — 9/1/83 Date

concur: Mark T Morse — Area Manager — 9/1/83 Date

Categorical Exclusion Review (CER) Checklist

Project Upper Smoke Creek Aquatic Habitat Management Plan File No. 6521.13 Date 8/30/83

Applicant UDSI, Bureau of Land Management Location T.32&33N.,R.16&17E.,Big Springs to Smoke Creek Res.

Description Preparation & Implementation of an aquatic habitat management plan cooperatively completed with the California Dept. of Fish & Game.

Categorical Exclusion No. 83-59

Exception *	Date	Source **	Comments
(1) Health & Safety	9/1/83	Area Manager	
## (2) Unique Resources	9/1/83	Wilderness Inventory Maps: Cal-Neva Planning Unit	
(3) Controversial	9/1/83	Cal-Neva Planning Documents	
(4) Risks	9/1/83	Team Analysis	
(5) Precedent	9/1/83	Area Manager	
(6) Cumulative	9/1/83	Team Analysis	
(7) Cult. & Hist.	9/8/83	District Archaeologist	
(8) T. & E. Species	9/1/83	Area Botanist & Wildlife Biologist	
(9) Violate Law	9/1/83	Planning Environmental Coordinator Area Manager	

* Refer to BLM Categorical Exclusion Review (CER) Procedures: Criteria for Exception - Description, for full explanation.

** Indicate the source of the information that lead to a determination by the specialist that the exception is not met. Information may come from several sources. Specialist must initial this column.

Recommended Mitigation

The gap fence and stream crossing will improve aquatic habitat conditions in the WSA CA-020-619A and they will be substantially unnoticeable in the unit as a whole. They will not impair the naturalness of the unit.